Workshop

STATISTICAL MODELS AND METHODS FOR MULTIVARIATE DATA WITH APPLICATIONS IN SOCIAL SCIENCES

17 Settembre 2009 - ore 10.00
Dipartimento Metodi Quantitativi

C.da S. Chiara, 50 – Brescia

MULTILEVEL SIMULTANEOUS COMPONENT ANALYSIS FOR STUDYING INTER-INDIVIDUAL AND INTRA-INDIVIDUAL VARIABILITIES
MARIEKE TIMMERMAN
University of Groningen, The Netherlands

CLUSTERWISE SIMULTANEOUS COMPONENT ANALYSIS FOR THE ANALYSIS OF STRUCTURAL DIFFERENCES IN MULTIVARIATE MULTILEVEL DATA
EVA CEULEMANS
Katholieke Universiteit Leuven, Belgium

THE IMPACT OF DIFFERENTIAL ITEM FUNCTIONING ON RASCH MEASURE
SILVIA GOLIA*

ON THE NONLINEARITY OF HOMOGENEOUS ORDINAL VARIABLES
MAURIZIO CARPITA* e MARICA MANISERA*

ITEM IMPORTANCE WITHIN LONGITUDINAL DATA
MARIKA VEZZOLI*

A PROPOSAL FOR MISSING VALUES TREATMENT IN SATISFACTION MEASUREMENT
PAOLA ZUCCOLOTTO*

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MODALITÀ di PARTECIPAZIONE

*La partecipazione è gratuita. Per motivi organizzativi è necessario comunicare la propria adesione inviando **entro il 14/09/2009** un messaggio (con nome, ente di appartenenza, recapito telefonico) a manisera@eco.unibs.it*

Prof.ssa Livia Dancelli e Prof. Maurizio Carpita

Abstract degli interventi

MULTILEVEL SIMULTANEOUS COMPONENT ANALYSIS FOR STUDYING INTER-INDIVIDUAL AND INTRAINDIVIDUAL VARIABILITIES

MARIEKE TIMMERMAN

We focus on the exploratory modelling of multivariate data that have been repeatedly gathered from more than one individual. We aim at identifying meaningful sources of both the inter-individual variability and the intra-individual variability in the observed variables, while expressing the similarities and differences in those sources across individuals.

CLUSTERWISE SIMULTANEOUS COMPONENT ANALYSIS FOR THE ANALYSIS OF STRUCTURAL DIFFERENCES IN MULTIVARIATE MULTILEVEL DATA

EVA CEULEMANS

A number of principal component analysis techniques exist to study structural differences in multivariate multilevel data, for instance, simultaneous component analysis (SCA, Timmerman & Kiers, 2003). However, these techniques suffer from some important limitations. Therefore, in this presentation, we propose a new technique, called clusterwise SCA, that solves these limitations by combining clustering and SCA analysis and that encompasses the existing techniques as special cases.

THE IMPACT OF DIFFERENTIAL ITEM FUNCTIONING ON RASCH MEASURE

SILVIA GOLIA

Differential item functioning (DIF) is understood to be present when something about the characteristics of a test taker interferes with the relationship between ability and item responses. When DIF is present, an impact on the estimated ability measure could be expected. Two types of DIF can be identified: uniform and nonuniform. The present simulation study addresses the issue in assessment of the impact of both kinds of DIF on the measures obtained applying the Rasch model when the questionnaire is formed by polytomous items.

ON THE NONLINEARITY OF HOMOGENEOUS ORDINAL VARIABLES

MAURIZIO CARPITA e MARICA MANISERA

In the social and economic research, the focus is often on the construction of a one-dimensional composite indicator for a latent variable underlying a set of m homogeneous ordinal variables from a Likert-type scale. The paper aims at evaluating the nonlinearity existing in this type of data, using Linear and NonLinear Principal Components Analysis. By means of a study with Probabilistic and Monte Carlo gauges, we also investigated whether this situation requires the application of the nonlinear technique instead of the linear one, computationally simpler and faster.

ITEM IMPORTANCE WITHIN LONGITUDINAL DATA

MARIKA VEZZOLI

Variable importance measurement within longitudinal data has been recently under scrutiny due to many scientific areas in which such data typology occurs. In such situations, common ensemble learning like Random Forest or Gradient Boosting Machine could be sub-optimal. The research derives variable importance measures for the CRAGGING algorithm and applies them to a comprehensive Italian social cooperatives workers dataset with the purpose of studying the relationship between the overall and the facet job satisfaction.

A PROPOSAL FOR MISSING VALUES TREATMENT IN SATISFACTION MEASUREMENT

PAOLA ZUCCOLOTTO

In the last decade a wide literature has been produced about statistical techniques for evaluating and measuring Satisfaction on the basis of judgements acquired from the subjects by means of a structured questionnaire. The questionnaire is usually formed by a set of items, asking for Satisfaction judgements about several different aspects of the product/service (facet Satisfaction, FS). With this approach, specific statistical techniques are employed in order to obtain a composite Satisfaction index, taking account of all the single FS judgements. This talk deals with the construction of composite satisfaction indexes in presence of missing data and the technique of Interval Imputation (Zuccolotto, 2008) is presented.